> "[I]t is indisputable that GTE shed its long distance and manufacturing operations during this period. Not all forms of diversification offer the same opportunities for cross-subsidization. Thus, even if GTE diversified into other new areas, it undeniably moved to a less integrated position with respect to the lines of business that are of relevance in the context of the MFJ."

Arrow and Carlton never come to grips with this argument. In fact, they appear to agree with our assessment, arguing in another context (p. 8) that "long-distance and equipment manufacturing are traditionally thought most likely to offer cost shifting opportunities."

Second, Arrow and Carlton point out that the RBOCs' opportunities for cost shifting declined as a consequence of the Decree (pp. 3-4). They assert without factual support (p. 5, footnote 3) that the effect on local rates of removing opportunities for cost misallocation prevalent under the old Bell system would not have occurred by 1984, and "might be expected to occur over a period of several years due to delays and inertia in the regulatory review process." Based on this assertion, they conclude that, under the hypothesis that diversification leads to cost shifting, the RBOCs' local rates should have declined between 1984 and 1992, even relative to the rates of a non-RBOC LEC with no change in diversification.

Arrow and Carlton's reasoning is seriously flawed, and their conclusion mistaken. It is important to realize that, in the new incarnation of the Arrow-Carlton "test," the distinctions between two separate hypotheses have been completely obscured. The first hypothesis is that diversification has led to cost shifting during the *post*-MFJ period. The second hypothesis is that diversification led to cost shifting in the *pre*-MFJ period. This distinction is important, since various RBOC witnesses (such as Rivera, Firestone, and Halprin) have testified that cost shifting is impossible in the post-MFJ period specifically because of new regulatory mechanisms that were not in place during the pre-MFJ period. These witnesses do not pretend that regulation was sufficient to deter cost shifting prior to the MFJ; nor do they suggest that the abuses that motivated the MFJ were illusory.

By examining the effects of changes in the diversification of a non-RBOC LEC (such as GTE) after the Decree, one might be able to shed some light on the first hypothesis -- that diversification has led

to cost shifting in the post-MFJ period. But, even under Arrow and Carlton's view, an examination of the effects of Decree-induced changes in the diversification of the RBOCs can only shed light on the second hypothesis -- whether diversification led to cost shifting prior to the MFJ. Arrow and Carlton would evidently have us believe, on the basis of their evidence, that cost shifting was never a problem in the first place, even in the darkest days of the old Bell system.

If instead one begins with the well-documented premise that cost shifting did occur prior to the MFJ, then Arrow and Carlton's response only serves to strengthen our conclusion. According to the logic of Arrow and Carlton's argument, if GTE's divestitures had not limited its ability to shift costs, then its local rates should have *risen* relative to those of the RBOCs (for whom the effects of cost-shifting opportunities were gradually disappearing). The fact that GTE's rates *fell* relative to those of the RBOCs is therefore a particularly dramatic demonstration that GTE engaged in large-scale cost shifting from its long distance and equipment activities until its divestitures.

Our original report also contained (pp. 113-116) detailed criticisms of McChesney's analysis, which had purported to show that GTE's local rates did *not* fall abnormally after its divestitures. Since no response to these criticisms has been offered, we will not repeat them here. However, one aspect of our discussion does bear repetition. Specifically, we wrote (p. 115):

> "[T]he coefficient of GTE in McChesney's regressions is a much more dependable indicator of the propensity for cost misallocation than is the manner in which this coefficient varies over the sample...[S]ince GTE was still far more diversified than the RBOCs even after the divestitures, the cost misallocation hypothesis has the clear implication that GTE's rates should have been higher than the RBOCs' throughout the period. The estimated coefficient of GTE confirms this prediction, and the statistical significance of this coefficient is off the map... [T]he most natural explanation of the residual difference between GTE and the RBOCs is that GTE on average had greater opportunities to misallocate costs."

Neither the RBOCs nor their affiants dispute this interpretation of McChesney's results.

> ***Conclusion #30:*** *The evidence presented by the RBOC witnesses on non-RBOC LECs other than GTE does not establish the absence of cost shifting during the post-Decree period. On the contrary, when this evidence is properly interpreted, it supports the hypothesis that cost shifting has occurred.*

As mentioned above, Arrow and Carlton's original affidavit also compared changes in local rates for the RBOCs and non-RBOC LECs other than GTE during the post-Decree period. They concluded (p. 20) that "the evidence does not generally support the view that non-RBOC rates rose faster than RBOC rates, as would be expected if cost shifting was significant." In our original report, we criticized this portion of their analysis in several ways.

First, we noted that diversification into different kinds of activities may create very different opportunities for cost shifting. In particular, many LECs diversify into activities that have little or no relation to equipment or long distance (p. 112). For this reason, GTE offers the best historical test of the cost-shifting hypothesis. Second, we observed that the RBOCs have acquired new opportunities for cost-shifting during the post-Decree period, both because they have diversified into new activities (as Arrow and Carlton admitted, p. 10), and because old activities have been moved out of the rate base with the progressive liberalization of regulation in many states (p. 113). Finally, we noted that the incremental impact of any given opportunity for cost misallocation may be greater for an RBOC than for an already-diversified non-RBOC LEC (p. 113). Thus, under the hypothesis that cost-shifting is possible, observed changes in cost-shifting opportunities since the Decree have no particular implication concerning relative changes in local rates for the RBOCs and the non-RBOC LECs, other than GTE. Evidence on relative changes in local rates for these companies therefore cannot shed any light on the validity of the cost-shifting hypothesis.

Arrow and Carlton do not dispute any of these observations. Instead, they simply fall back on the argument (discussed above in the context of GTE) that, under the hypothesis that cost shifting was possible prior to the Decree, the RBOCs' local rates should have been falling relative to those of the non-RBOC LECs after the Decree. Once again, we believe that it is more reasonable to proceed from the well-documented premise that cost-shifting did occur prior to the Decree. It is then possible to account for Arrow and Carlton's evidence in a variety of ways that are entirely consistent with the existence of

significant cost-shifting during the post-Decree period. For example: (1) the RBOCs may have benefitted from the arrival of new and equally valuable cost shifting opportunities, such as those associated with the provision of cellular service, (2) the practice of regulatory benchmarking -- touted by so many RBOC witnesses -- of the non-RBOC LECs to the RBOCs may have prevented the non-RBOCs' rates from rising faster than those of the RBOCs, (3) the MFJ may have imposed offsetting costs on the RBOCs, for example as a result of the requirement to implement equal access, or (4) contrary to Arrow and Carlton's unsubstantiated assumption, regulation may have proven ineffective at ferreting out the residual effects of cost shifting left over from the old Bell system.

More direct evidence on cost shifting by non-RBOC LECs, other than GTE, during the post-Decree period can be obtained by examining the local rates of United Telecom subsequent to the acquisition of Sprint. As we explained in our original report (p. 116),

> "If the acquisition of Sprint provided United Telecom with important incremental opportunities for cost misallocation, and if United Telecom could take advantage of these opportunities within the sample period, one would expect United Telecom's rates to show an abnormal increase... We have explored this possibility, first by reconstructing McChesney's analysis, and then by adding a variable that allows United Telecom's relative rates to change through time. The estimates show abnormal increase in United Telecom's rates, and we reject the hypothesis of no relative increase with high statistical confidence. Once again, the data reaffirm our concerns about the potential for cost misallocation."

The RBOCs and their affiants are conspicuously silent on this issue.

> ***Conclusion #31:*** *The evidence presented by the RBOC witnesses on GTE sheds no light whatsoever on the issue of market power leveraging.*

The McChesney affidavit that accompanied the original RBOC submissions in this proceeding also contained an empirical exercise which purported to demonstrate that GTE did not leverage market power from the local exchange into long distance services. Our original report provided a detailed critique of McChesney's analysis. For a variety of compelling reasons, we concluded that the analysis was entirely meaningless. As no response has been offered to this critique, we will not repeat our arguments here.

SAMPLE: 1993

DEPENDENT VARIABLE: Log of Local Rate, no SLC
EXPLANATORY VARIABLES: Log of City Population, New York City Dummy, Philadelphia Dummy, State Dummies where RBOCs Operate, All Year Dummies, and a constant

Source	SS	df	MS		
Model	5.19992082	38	.136840022	Number of obs =	80
Residual	.330693814	41	.008065703	F(38, 41) =	16.97
				Prob > F =	0.0000
				R-square =	0.9402
				Adj R-square =	0.8848
Total	5.53061463	79	.07000778	Root MSE =	.08981

lnrate	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnpop	.0336642	.0097833	3.441	0.001	.0139064	.0534219
NYC	-.1275547	.1125074	-1.134	0.263	-.3547679	.0996586
Phil	.0285392	.1035555	0.276	0.784	-.1805953	.2376738
AL	.4177996	.1100643	3.796	0.000	.1955203	.6400789
AR	.3998479	.091499	4.370	0.000	.2150619	.5846338
AZ	.0489635	.1101644	0.444	0.659	-.1735181	.2714451
CA	-.3836383	.0706259	-5.432	0.000	-.5262703	-.2410063
CO	.259695	.0819857	3.168	0.003	.0941214	.4252686
DC	.2867761	.1103643	2.598	0.013	.0638908	.5096614
FL	-.056421	.0899094	-0.628	0.534	-.2379968	.1251547
GA	.2335878	.0898761	2.599	0.013	.0520794	.4150961
IL	.1449043	.0820005	1.767	0.085	-.020699	.3105077
IN	.0106154	.1105886	0.096	0.924	-.2127228	.2339535
KY	.3895884	.1099966	3.542	0.001	.1674459	.611731
LA	.202261	.0898442	2.251	0.030	.020817	.3837049
MA	.296891	.0823229	3.606	0.001	.1306365	.4631456
MD	.3167157	.1105415	2.865	0.007	.0934726	.5399587
ME	.1153744	.1106999	1.042	0.303	-.1081886	.3389374
MI	-.1372467	.0819843	-1.674	0.102	-.3028174	.028324
MN	.2249833	.0910693	2.470	0.018	.0410652	.4089014
MO	-.0733025	.0822417	-0.891	0.378	-.2393929	.0927879
MS	.4523011	.1123929	4.024	0.000	.225319	.6792831
MT	.2420494	.1115913	2.169	0.036	.0166863	.4674125
NC	.0402674	.0911541	0.442	0.661	-.1438222	.2243569
NE	.344518	.1113656	3.094	0.004	.1196107	.5694253
NJ	-.3535543	.1131608	-3.124	0.003	-.5820872	-.1250214
NM	.303805	.1119897	2.713	0.010	.0776373	.5299727
NY	.506018	.0796247	6.355	0.000	.3452127	.6668233
OH	.26615	.0778205	3.420	0.001	.1089884	.4233116
OR	.269788	.089912	3.001	0.005	.0882069	.451369
PA	-.0288085	.0764189	-0.377	0.708	-.1831395	.1255225
RI	.3746768	.1100511	3.405	0.001	.1524241	.5969296
TN	.0491796	.0902067	0.545	0.589	-.1329965	.2313556
TX	-.1937016	.0737117	-2.628	0.012	-.3425654	-.0448379
UT	-.0434061	.11153	-0.389	0.699	-.2686455	.1818334
VA	.2079389	.1100112	1.890	0.066	-.0142333	.4301112
WA	.0479839	.1102921	0.435	0.666	-.1747554	.2707233
WV	.693575	.1109925	6.249	0.000	.4694211	.9177289
_cons	1.661832	.136652	12.161	0.000	1.385857	1.937806

CERTIFICATE OF SERVICE

I, Ann Marie Abrahamson, do hereby certify that on this 24th day of May, 1996, a copy of the foregoing "Reply Comments of AT&T Corp. Detariffing, Pricing, Bundling and Related Issues" was mailed by U.S. first class mail, postage prepaid, to the parties listed on the attached Service List.

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C. CELLULAR SERVICE

Conclusion #32: *Cellular markets are characterized by a peculiar feature (fixed capacity), not present in other markets such as long distance, that may well eliminate the incentive to discriminate against competitors. Moreover, the evidence presented by the RBOC witnesses does not, in any event, establish the absence of abuse in cellular markets.*

Various RBOC witnesses attempted in their original submissions to document an alleged absence of abuse in cellular markets. Assuming for the moment that this evidence is valid (which it is not), this would prove nothing about the likelihood of discrimination in other services, such as long distance.

We pointed out in our first report (pp. 118-119) that the consistency with which one finds near-equality of market shares between cellular competitors suggests strongly that these markets are driven by some peculiar factor. One does not have to look far to identify this factor. As is evident from the magnitude of cellular airtime charges and the auction prices of PCS licenses, spectrum is the key scarce component in producing cellular services. Thus, as the demand for mobile services has grown, the allocation of spectrum capacity (50-50) has dictated market shares. None of the RBOC witnesses have challenged this interpretation.

Conditions of fixed, scarce capacity imply that the potential gains from discrimination in cellular markets are minimal. Discriminatory activities that raise the cost or degrade the quality of a competitor's cellular service are equivalent, from an analytic standpoint, to the imposition of a "tax" on the competitor. A well-known result from the theory of taxation tells us that when supply is inelastic (fixed), as here, the economic burden of a tax is born entirely by the producer. Thus, discrimination by an RBOC against a cellular competitor would not induce the competitor to change its quality-adjusted price; rather, the effects of this action would simply eat into the competitor's quasi-rents [53] Taking the competitor's pricing

[53] If the discriminatory activity raised costs, leaving quality constant, the competitor would simply leave its price unchanged. If the discriminatory activity reduced quality without changing costs, the competitor would reduce price by an amount sufficient to offset (in the eyes of consumers) the decline in quality.

response into account, consumers would not be induced to shift from the competitor to the RBOC's affiliate. Consequently, the RBOC would not be better off as a result of its discriminatory action.

Thus, Hausman is simply wrong when he writes (p. 27, footnote 63), concerning our leveraging argument, that "the hypothetical network externality example of [Bernheim and Willig]... has already been proven wrong by the experience in cellular [service]." Even if Hausman is correct about the absence of abuses, the experience in cellular service would be of no relevance whatsoever to a market such as long distance, where fixed capacity is not a binding constraint. Similarly, the RBOCs are totally incorrect when they write (RBOC reply, p. 75) that "the BOCs have essentially the same hypothetical incentive and ability to act anticompetitively against rival cellular carriers as they would to act anticompetitively against other interexchange carriers upon removal of Decree restrictions."

We now turn to the "evidence" on the alleged absence of cellular abuses. The single most important piece of evidence marshaled in favor of this proposition in the RBOCs' original submissions was the rough equality of cellular market shares (with the RBOCs serving, on average, holding 51% shares in their markets). But as we have already argued, this is simply a reflection of the fact that scarce spectrum capacity has dictated market shares. Indeed, given the high value that consumers attach to mobile telephony, only the most extreme discriminatory practices would degrade the quality of service to the point where a non-wireline carrier would be unable to sell its services profitably. Near-equality of market shares is therefore no indication that the wireline carrier has failed to benefit from its association with a LEC, either through discriminatory practices or through the misallocation of costs. These points are unrebutted.

In our first report, we also pointed out (p. 120) that the RBOCs' arguments concerning cellular market shares are inconsistent with their position that their cellular affiliates have been crippled by a tremendous competitive disadvantage (their inability to resell bulk long distance services). If their attempt to draw inferences about the presence of discriminatory behavior from data on market share was valid,

then the failure of the RBOCs to cede *more* than half of the market would indicate the existence of some offsetting advantage -- presumably discrimination. The RBOCs respond (RBOC reply, p. 76), in effect, that their competitive disadvantage has been offset by a first-mover advantage (the fact that they were allowed to enter these markets first). However, once the RBOCs concede that there are advantages and disadvantages working in both directions, they must also admit, of necessity, that it is impossible to rule out the existence of discrimination based on the market share evidence presented by their affiants. Moreover, their specific hypothesis -- that their competitive disadvantages are offset by a first-mover advantage -- are contradicted by the facts. The first mover advantage would dissipate through time. Thus, if there were no other offsetting advantage, the RBOCs' market share would settle down to something *less* than 50%. Yet it seems to stabilize around 50%. Moreover, the RBOCs' position is contradicted by the evidence of their own witness (Schmalensee), who showed that first-mover wireline carriers do every bit as well as first-mover non-wireline carriers. Thus, something other than the first mover advantage must, under the RBOCs' reasoning, offset the line-of-business disadvantage.

Our original report (pp. 120-121) also exposed as fallacious several other arguments concerning cellular markets, based on trends in output and prices, or on the existence of high-profile mergers (e.g. AT&T-McCaw). With one exception, no defense of the RBOCs' original positions have been offered. The single exception is Arrow and Carlton's suggestion that PacTel's spinoff of its wireless operations implies that opportunities to discriminate in wireless communications are of little value. In our first report, we responded in two ways (p. 121): first, PacTel's strategy is the exception rather than the rule, and second, the spinoff proves only that, correctly or incorrectly, PacTel expected its wireless division to achieve offsetting advantages (e.g. in the form of vertically integrated products, or freedom from the need to comply with regulation). In their reply affidavit (pp. 10-11), Arrow and Carlton repeat, but do not answer, our first response. With respect to our second response, they suggest that one of the purposes of the spinoff was to defeat regulatory efforts to lower local exchange rates using profits from the wireless

operation. If this characterization is correct, then cellular services were *effectively* included in PacTel's regulated rate base. In that case, it is easy to understand why cost shifting would be of little value, and why PacTel would wish to spin off its cellular operation. However, it would be equally evident from this characterization that PacTel is the exception rather than the rule (since cellular services are generally not included in regulated rate bases), and that the PacTel cellular experience is inapplicable to long distance services and equipment (since it is assumed that these services would also not be included in regulated rate bases).

D. THE EASTERN CORRIDOR EXCEPTIONS

Conclusion #33: *The Eastern corridor exceptions provide extremely poor experimental laboratories for assessing the impact of removing the interLATA ban.*

A number of RBOC witnesses have cited the Eastern corridor exceptions as examples of RBOC participation in adjacent markets. In our original report, we concluded that the Eastern corridors provide extremely poor experimental laboratories for assessing the impact of removing the interLATA ban. We review our four reasons below, and evaluate the responses contained in the reply affidavit of Higgins.

(1) "The carrier access code requirement has proven to be a debilitating competitive handicap" for the RBOCs in the Eastern corridors (p. 122). Higgins' response is a concession: he agrees that this factor would reduce, "but not necessarily [remove] altogether" the profitability of leveraging market power (p. 7).

(2) "[U]nilateral incentives to engage in discriminatory practices are strongest when calls originate and terminate within the area of the same RBOC. Traffic affected by the New York/New Jersey exemption does not fall into this category" (p. 122). Higgins apparently construes this point as an assertion that the "narrowness" of the Eastern corridor exceptions would limit the potential profits from leveraging, and essentially concedes the point, arguing in effect that some incentive would still remain (pp. 6-7). He does not, however, address the strategic role of terminating access, and therefore has apparently failed to

understand that more than mere "narrowness" is at issue here. Thus, he underestimates the extent to which the peculiar features of the Eastern corridor exceptions limit the potential gains from anticompetitive conduct.

(3) "[S]ince all long distance calls from a competing IXC are funneled through that IXC's POP, it would be extremely difficult to degrade the quality of calls for customers of a competing IXC within the corridor, without also degrading service for calls placed over the same IXC's facilities originating or terminating outside the corridor. Thus, relative to prospective gains, the potentially adverse impact of discrimination on access revenues is far larger than it would be if the line of business restriction was lifted for all interLATA traffic" (pp. 122-23). Higgins makes no specific response to this point, apparently considering it another aspect of "narrowness," which he believes only reduces, and does not eliminate the incentives for abusive behavior. Yet he fails to realize -- as the preceding quotation emphasizes -- that narrowness not only reduces the gains, but also increases the *costs* to anticompetitive behavior. It is easy to imagine that, for such a narrow exception, the costs might simply outweigh the gains.

(4) "[T]he most likely form of abuse would entail the cloaking of discrimination under the guise of integrated service offerings. Given the narrowness of the exceptions, it simply may not have been in the interests of the RBOCs to finance the development, testing, and implementation of such offerings" (p. 123). In response, Higgins simply notes that we have provided no evidence that the development, testing, and implementation of new, integrated services is costly (p. 7). While such evidence could be assembled, we regard this as common knowledge for those familiar with the telecommunications industry. In addition Higgins ignores entirely the point that discrimination through service integration would be impossible in the context of the Eastern corridors in any event: "the exceptions necessitate disintegrated, rather than integrated, service offerings, since customers cannot obtain all of their long distance services from the RBOCs" (p. 123).

We also noted in our first report (p. 122) that any remaining incentives to capitalize on anticompetitive opportunities must have been inconsequential, since two of the three operating companies affected evidently wrote off these markets. Higgins research strategy is, in effect, to look for anticompetitive conduct in markets where he concedes (first affidavit, pp. 14-15) that the RBOCs have made no real attempt to become serious players.

In summary, neither the RBOCs nor their affiants have provided any substantive refutation to the unique factors that render the alleged evidence on the absence of abuses in the Eastern corridors entirely inapplicable to the larger questions at the heart of the MFJ's interLATA ban.

> ***Conclusion #34:*** *The evidence presented by the RBOC witnesses does not establish the absence of abuses in the Eastern corridors. On the contrary, careful examination of the data reveals patterns that are consistent with abuses.*

In his original affidavit, Higgins presented several different kinds of evidence concerning the behavior of the RBOCs in the Eastern corridor. His reply affidavit contains his efforts to defend three sub-studies against criticisms contained in our first report.

(1) Rates of equal access conversion. We have criticized Higgins' analysis of equal access conversion on the grounds that he has only ruled out one blatant form of discrimination that would have required the manipulation of a closely monitored and easily quantified activity. Higgins' response is nothing short of astounding: "[o]n the contrary, based on the large range of conversion rates across states for both NYNEX and Bell Atlantic, *disguising an exceptionally slow rate of conversion would apparently have been simple*" (p. 8, emphasis added). While we disagree with Higgins' assessment in this particular instance (after all, virtually any interested party could have used the same data to conduct Higgins' test), it is noteworthy that, contrary to other RBOC witnesses, *Higgins has endorsed the principle that it is "simple" for the RBOCs to disguise even the most presumptively transparent discriminatory practices.*

(2) Discrimination through access charges. We have criticized Higgins' analysis of access charges on the grounds that, like equal access conversion, this is a peculiar place to look for discriminatory

practices.[54] As we noted (p. 124), access charge differentials tailored to capitalize on the Eastern corridor would be difficult if not impossible to disguise. This would, for example, entail imposing different charges for *originating* access on different calls placed by the same party in New York City, depending on whether the call *terminates* in Northern New Jersey or Connecticut. Higgins asserts that the resulting revenue losses would be small because the elasticity of demand for long distance service is relatively low. But in response to our very next criticism (below), Higgins inadvertently minimizes the importance of this low elasticity by pointing out that "access charges generally do not differ across LATAs within an operating company" (p. 9). In other words, to calculate the costs associated with access charge discrimination, one must apply Higgins' small demand elasticity to a base consisting of all long distance calls originating or terminating in the region of the affected operating company.

We also argued that Higgins' statistical analysis is unconvincing because the data are highly aggregated, and therefore diluted by a large volume of other access revenues that are not even remotely related to the Eastern corridor. Whether or not access charges remained uniform across each operating company's LATAs, this implies that the effects of concern may be swamped by a wide variety of other factors. Higgins responds that measurement error in the access-revenue dependent variable does not bias the coefficient estimates (p. 9). While this statement is correct as a matter of theory, it is also true that

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[54]The RBOCs have cited this observation out of context, incorrectly characterizing it as conceding, in general, the difficulty of discriminating through access charges (RBOC Reply, pp. 73-74). Nothing could be further from the truth. Our argument was explicitly predicated on the special features of the Eastern corridor exceptions. These exceptions only allowed the BOCs to compete for traffic that both originated and terminated within the Eastern corridors. As explained in the text, any attempt to discriminate against the IXCs selectively for this traffic, and only this traffic, would have been easy to detect. Alternatively, a BOC-wide change in access charges would have been a very blunt instrument for exploiting market power in the Eastern corridor.

These observations in no way imply that the RBOCs would refrain from discriminating through access prices, or that such discrimination would be easily detectable, were the Court to vacate the Decree. Since the boundary between access and long distance would be inherently arbitrary subsequent to the reintegration of the RBOCs, cost shifting between these two services would be particularly difficult to police. Consequently, the RBOCs' ability to subvert access price regulation would be greatly magnified. Thus, in one highly plausible scenario (absent the Decree), the RBOCs would succeed in imposing a general increase in the prices of particular access services by shifting costs from long distance into access. This would handicap the RBOCs' interexchange rivals, thereby permitting the RBOCs to earn substantial economic rents both through access prices, and through substantial markups on their own long distance services.

measurement error in the dependent variable inflates standard errors, thereby reducing the statistical reliability of point estimates. According to Higgins' logic, it is perfectly acceptable to estimate the effects of some private event on the consumption of a particular household by estimating an equation explaining national consumption -- after all, adding in the consumption of all those other people just contributes measurement error to the dependent variable. Higgins' results demonstrate the practical importance of this consideration. As noted in our original report, the magnitude of the standard error for the key coefficient precludes Higgins from distinguishing confidently between the hypotheses of interest.

(3) Local rates and cost shifting. We have criticized Higgins' analysis of cost shifting on the grounds that the Eastern corridor operations of Bell of Pennsylvania and NYNEX were so tiny relative to their local operations that the misallocation of even a large fraction of these interLATA costs would have a negligible effect on local rates.[55] Thus, it is very likely that the analysis is inherently incapable of detecting cost shifting. Higgins responds simply that we "provide no factual support for [this] claim" (p. 9). Yet the necessary factual support is contained in his original affidavit (pp. 14-15), where he acknowledges that New Jersey Bell was, until recently, the only RBOC to pursue the Eastern corridor interLATA traffic aggressively. Bell Atlantic itself concedes that "limited role in the corridors is further shown by the fact that it obtains only 0.1 percent of interLATA presubscriptions in these markets."[56] Under these conditions, it is ridiculous for Higgins to insinuate that expenses associated with long distance service in the Eastern corridors compared with the costs of the core local businesses of these companies.

This point leads naturally into our discussion of standard errors. As we have noted, on the basis of Higgins' regressions, one cannot rule out with statistical confidence the possibility that local rates for New

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[55]As noted on page 125 of our first report, due to a problem of econometric identification, Higgins is unable estimate the Eastern corridor exception's impact on New Jersey Bell's local rates. Thus, Higgins' analysis of cost shifting is applicable only to Bell of Pennsylvania and NYNEX.

[56]Declaration of Robert Crandall, p. 7, attached as an appendix to Petition to Regulate Bell Atlantic as a Nondominant Provider of Interstate InterLATA Corridor Service, filed with FCC July 7, 1995.

York and Philadelphia were abnormally high -- a finding that would be consistent with cost shifting. Higgins refers to this point as "disingenuous" (p. 9), but his explanation for this claim demonstrates profound confusion concerning econometric practice. In particular, he states that "statistics cannot be used to prove a negative -- in this case, that no cross-subsidization occurred... In this case these statistics fail to disprove the hypothesis that regulatory and market forces successfully prevent [abuses]" (p. 10). The final sentence is true so far as it goes. But the central question is whether the statistics disprove any other hypothesis of conceivable interest. Sound econometric practice requires one to formalize alternative hypotheses with some precision. Suppose for the sake of illustration that the shifting of *all* long distance costs from the Eastern corridors to the local exchange would have increased total local exchange costs by 5%. If a positive 5% price differential lies within one standard deviation of the point estimate, then one has learned essentially nothing -- the estimates are consistent with everything from no cost shifting to 100% cost shifting. If, on the other hand, a positive 1% price differential lies at the edge of the 95% confidence interval, then one can reject the hypothesis that the RBOCs shifted more than 20% of costs, but one cannot reject the hypothesis that the RBOCs shifted, say, 10% of costs (at least at the 95% level of confidence). If the truth is that no cost shifting took place, one will never be able to reject the hypothesis that there was *some* cost shifting, but one certainly may be able to reject specific hypotheses concerning the magnitude of cost shifting (e.g. that the RBOCs shifted 10% of costs). Higgins' analysis sheds no light whatsoever on the issues of interest precisely because he has abdicated his responsibility as an applied econometrician to explore the precise implications of alternative hypotheses.

We also criticized Higgins' analysis of cost shifting on the grounds that the data are inherently incapable of revealing whether local rates in New York City are abnormally high or abnormally low (p. 125). Higgins' econometric procedure is equivalent to extrapolating rates for New York City based on rates in other cities (a "but for the exception" rate), and then comparing this projection with actual rates in New York City. But as we have explained, any such projection is wholly unreliable because New York

City is completely unique in Higgins' data set. In particular, New York City has a population of 7.3 million people, more than twice as many as the next largest city in the sample. Moreover, only one other city in the sample has a population of over 3 million people. Thus, Higgins' implicit calculation of the but-for-the-exception rate requires him to extrapolate far out of sample -- *and his data are inherently incapable of telling him anything about the true functional form out of sample*. After making this point, we proceeded to demonstrate that this out-of-sample extrapolation inevitably renders the results highly sensitive to functional specification, by describing an alternative functional specification for which the estimated coefficient of NYPH was positive and statistically significant.[57]

Higgins' response demonstrates a clear failure to understand the nature of the criticism. Specifically, he attempts to conduct a statistical test to determine which functional form provides a better fit to the data (p. 11). But this is completely unresponsive to the thrust of our argument.[58] At most, a statistical test of this sort can only reveal which functional form fits the data better *within sample*. It provides no information whatsoever on the subject of which functional form best approximates the true relationship *out of sample*. Higgins simply has no legitimate scientific basis for making an out-of-sample extrapolation based on one functional assumption rather than another.

Since it is impossible to learn anything from an examination of local rates for New York City, Higgins' analysis boils down to a study of rates in Philadelphia. In our original report, we described two regressions in which separate effects were estimated for New York and Philadelphia. In response to

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[57]The RBOCs falsely state in their reply (p. 78) that we performed no statistical analysis of our own. Higgins, in contrast, merely chastises us for not attaching our regression results (p. 11). Although we believe that this is beside the central point, we have complied with his request by attaching the estimated equation. The discrepancy between our results and those in Higgins' reply affidavit are attributable to the fact that we have pooled observations across years. Higgins' assessment of statistical significance is misleading because his estimated coefficient for NYPH is consistently positive, year after year. If the true value were zero, the distribution should, contrary to this finding, be centered around zero. Pooling of observations is one way to make use of this additional information.

[58]Indeed, we state explicitly (p. 126) that we do not believe our regression results to be any more reliable than the one that Higgins presents. The regression is mentioned only to support the proposition that "the end result of any such analysis only reflects an arbitrary assumption about functional form."

Higgins' implicit request, we attach the regressions results to this report (p. 126). These differ from the regressions reported in Higgins' reply affidavit in that we have pooled observations across years (see footnote 56 for further discussion). Pooling accounts for the statistical significance of the Philadelphia effect in the specification that controls for density -- Higgins' measures of statistical significance fail to account for the consistency of the sign of this coefficient across years. We have also estimated separate versions of Higgins' preferred specification for each of the eight years in our sample (1986 through 1993); results are attached. Our estimates do not coincide exactly with those of Higgins; indeed, we find that the Philadelphia effects are positive but statistically insignificant in six of the eight years. While these results slightly favor (in terms of likelihood) the hypothesis that rates in Philadelphia were abnormally high, the analysis is admittedly inconclusive. Particularly in light of Higgins' failure to explore the quantitative implications of meaningful alternative hypotheses, one ultimately learns nothing more about the presence or absence of cost shifting from an examination of rates in Philadelphia than from rates in New York City.

E. OTHER EXAMPLES OF ADJACENT MARKETS

> ***Conclusion #36:*** *Evidence sponsored by the RBOCs concerning behavior in other adjacent markets is of questionable relevance and open to a variety of interpretations. Thus, it fails entirely to allay the central concerns underlying the MFJ.*

Our original report also considered arguments about RBOC behavior in other adjacent markets, such as paging, information services, Centrex, public telephones, and CPE distribution (pp. 127-129). Neither the RBOCs nor their witnesses have attempted to defend their original positions concerning these services. Although we take up Hausman's evidence on intraLATA toll separately in section VII.A, it is worth reiterating in this context (see p. 128 of our first report) that the IXCs' customers must use 10-XXX carrier access codes. We have made the point that this may, by itself, be sufficient in most cases to blunt the force of competition and protect the RBOCs' positions without any active discrimination. No response has been provided.

VI. THE COMPETITIVENESS OF INTERLATA SERVICES

A. AN ASSESSMENT OF INTERLATA COMPETITION

In our first report (p. 130), we emphasized that, to understand the workings of interLATA competition, one must pay careful attention both to the structural features that distinguish wholesale and retail markets, and to commonalities and other features that link these markets together. In this section, we review our analysis of wholesale and retail markets, and we evaluate the criticisms of our analysis contained in the latest round of reports submitted by the RBOCs' witnesses.

1. Bulk wholesale long distance

a. Barriers to entry

Conclusion #37: Barriers to entry into bulk wholesale long distance are modest. Historically, resale has helped competitors to overcome the sunk costs of entry, and there are no other significant entry barriers.

It is universally recognized that market power cannot exist in the absence of significant barriers to entry. In our first report, we considered possible entry barriers confronting potential entrants into wholesale long distance, and concluded that no significant impediments to potential competition exist.

As our first report points out (p. 131), regulation does not in any way impede entry into the provision of long distance services. Moreover, even a long distance incumbent would not be capable of exploiting an entrenched position (as the RBOCs can exploit entrenched positions in local exchange services), since neither customers nor competitors are in any way dependent upon a single carrier's services. Neither of these arguments has been challenged by any of the RBOCs' witnesses.

Our first report contains a more extended discussion of another possible source of entry barriers for wholesale long distance: sunk costs. After careful consideration of the relevant facts, we concluded

that sunk costs do not significantly impede potential competition in this market.[59] Our conclusion was based on two observations.

First, according to AT&T, fiber transmission facilities (including amortized capital costs and maintenance) amount to only 3% of the total costs for all of AT&T's network services (p. 131). Thus, while the total costs of a fiber network are high in absolute terms, they are not particularly large relative to the total costs or revenues of the activities they support [60] Although the RBOC witnesses continue to assert that the sunk costs of entry constitute significant entry barriers for the long distance market, they have neither challenged AT&T's figure nor offered data of their own.

Second, resale of facilities helps potential competitors to overcome the sunk costs of entry into long distance. Resellers allow regional providers to complete their networks, and thereby compete with national facilities-based carriers. If national carriers set prices above competitive levels, regional carriers can undercut their larger rivals within region, while using resale to match prices outside of region. Thus, there is no need to enter the market with a full-blown national network. Rather, competitors can enter by creating new facilities on a small scale, and add facilities once market success is demonstrated. As noted in our first report (pp. 132-133), successful examples of the reseller-to-regional-to-national strategies include ALC/Allnet and LDDS.

Although some of the RBOCs' witnesses mention resale, none of their remarks are relevant in this context. For example, the most common criticism of resale as a competitive force is that resellers don't control their own facilities (see e.g. the RBOCs' reply brief, p. 25). This argument implies only that

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[59]The RBOCs quote us in their reply brief (pp. 23-24) as saying that facilities-based entry entails substantial up-front costs. However, the passage has been taken out of context. In the original, it was immediately followed by a discussion of the factors that mitigate this consideration. We revisit those factors in this report.

[60]Thus, the observation that "AT&T has invested an estimated $3.2 billion in constructing its fiber network" (RBOC reply affidavit, p. 24, footnote 18) is irrelevant. IXCs need not enter on the same scale as AT&T, and need not rely entirely on their own facilities. However, even if an entrant was committed to a facilities-based strategy, the amortized costs of its network investment would apparently amount to no more than 3% of annual revenue. These kinds of figures do not distinguish long distance as an industry in which sunk costs of entry are particularly large.